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DEPARTMENT OF BACTERIOLOGY

July 16, 1948

Dr. Michael Heidelberger
Columbia University
College of Physicians & Surgeons
630 West 168th Street
New York-32, New York

Dear Michael:

Thank you very much for your suggestions and questions on the hemolysis paper.

In saying that "the velocity curves having catalytic appearances" I mean that we are dealing with a family of curves which all tend to go toward the same maximum value. In the case of a precipitin curve this does not apply because each member of a family of precipitin curves carried out with different amounts of antibody would reach a maximal level corresponding to the amount of antibody employed and would therefore be stoichiometric just like the kinetic curves shown in the paper for antibody excess and limited complement. In other words, the expression "catalytic appearance" refers to the entire group of curves corresponding to different levels of antibody rather than the shape of any one curve.

In regard to your second question concerning the dissimilar kinetic behavior of antisera A and B I can't see how non-hemolytic antibody could block reactive sites because I think that a reactive site, by definition, is one which reacts with hemolytic antibody.

I am glad you called my attention to Brunius' value for the number of antibody molecules required for the lysis of one red cell, and I shall try to include a reference to him when I get the galley proof. It is perfectly true, of course, that the older value of 500 molecules of antibody corresponds to a 30-45 minute level while ours of 50 corresponds to 440 minutes of reaction time. But in the older work it was not realized, of course, that the hemolytic reaction in the presence of excess complement keeps on progressing with time. For that matter, our value of 50 A isn't a maximal value either since the reaction is not finished at 440 minutes. We have been at work during the last couple of months investigating various hemolytic antisera in an attempt to discover reasons for their diverse catalytic behavior. One factor which appears to play a role is differences in the speed of interaction of antibody with red cells. If one allows that step to go to completion before starting hemolysis by the addition of complement the kinetic curves are quite different. We are now attempting to obtain a clearer picture of the kinetics of hemolysis proper by allowing the interaction of red cells and antibody to proceed to completion.

Dr. Michael Heidelberger

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Under separate cover I am sending you a lantern slide of figure 9. If you would like to have any of the others just let me know.

Thanks very much for your invitation for dinner. We are planning to come to New York on August 11th. If it is all right with you we could come and have dinner with you on Thursday evening, August 12th. We were fortunate in getting Isabel Morgan's place in Woods Hole for the period of August 16th to September 8th, so we will be on our way to Woods Hole when we come to New York.

I am very happy to hear of Charlie's appointment at Wisconsin, and should like to hear more about it when I see you. Best regards from Elinor and myself.

Sincerely yours,

A handwritten signature in dark ink, appearing to read 'Manfred'.

Manfred M. Mayer

MM:szg